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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/797,078	03/11/2004	Hiroyuki Mitani	250127US0	4373

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OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C.
1940 DUKE STREET
ALEXANDRIA, VA 22314

EXAMINER

HOPKINS, ROBERT A

ART UNIT PAPER NUMBER

1724

DATE MAILED: 05/09/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/797,078

Applicant(s)

MITANI ET AL.

Examiner

Robert A. Hopkins

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 April 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3 and 5-8 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3 and 5-8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 3-11-04.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-3,5-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Japanese Reference(2002-219341) taken together with De Rosset(2958391)

Japanese reference teaches a supporting base for a gas separation membrane comprising a multilayer cylinder of porous sintered metal wherein the layer of the multilayer structure on the side in contact with the separated gas comprises a porous sintered metal having a relative density of at least 30% and being made of particles to be sintered having an average particle diameter of at least 10 microns, the layer of the multilayer structure on the side of the gas separation membrane formation comprises a porous sintered metal made of particles to be sintered having an average particle diameter of 8 microns or less and a maximum particle diameter of 45 microns or less and has a percentage of open area of at least 30%. Japanese reference is silent as to wherein the multilayer cylinder of porous sintered metal has an outer diameter of 15mm or less and a length of 100 mm or longer. De Rosset teaches a supporting base for a gas separation membrane including a cylinder(15) of porous sintered metal having particles of 10 microns average diameter having a length greater than 100mm(36

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inches= 914 mm; column 10 lines 30-38) and an outer diameter of 1 inch(25.4 mm). It would have been obvious to someone of ordinary skill in the art at the time of the invention to provide a supporting base having a length greater than 100mm in order to provide for a membrane having a supporting surface of greater surface area. Examiner furthermore respectfully submits that the difference in support function between a 25mm diameter support structure and a 15mm support structure over a 900 mm length support is minimal, therefore it would have been obvious to someone of ordinary skill in the art at the time of the invention to substitute a cylinder of outer diameter of 15mm or less for the 25mm diameter support of De Rosset in order to provide for a cylinder of smaller diameter and extended length for the membrane of Japanese reference.

Japanese reference further teaches wherein the supporting base for gas separation membrane is the one produced by sintering particles having an aspect ratio of less than 2. Japanese reference further teaches a diffusion barrier layer is formed on the surface of the sintered metal on the side of the gas separation membrane formation. Japanese reference taken together with De Rosset further teaches a gas separation filter produced by forming a gas separation membrane on the supporting base for gas separation membrane of claim 1 on the side of the gas separation membrane formation. Japanese reference further teaches wherein the gas separation membrane is a membrane selected from the list in claim 8.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

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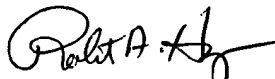
Drost et al(6649559) teaches a sintered metal support for a metal gas separation membrane, the sintered metal support in the form of a thin tubule(column 6 lines 36-37) having a thickness between 0.50 and 20 micrometers(column 5 lines 33-34).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert A. Hopkins whose telephone number is 571-272-1159. The examiner can normally be reached on Monday-Thursday, 7:30am-6pm, every Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Duane Smith can be reached on 571-272-1166. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Rah
May 1, 2006


ROBERT A. HOPKINS
PRIMARY EXAMINER
P.U. 1724